

Name \_\_\_\_\_

#### Chapter 4 Study Guide CP Living

What were the two things wrong with Rutherford's model of the atom?

Describe Neils Bohr's hydrogen atom in detail.

How do electrons behave when energy is added to the atom? How can the light that is given off be used to identify an element? For example, think of the flame test lab.

Define excited state and ground state.

Why was Bohr's model wrong?

What are Schrodinger and Heisenberg's contributions to the quantum model?

In the quantum model, what is an orbital? What kind of orbitals have we worked with? How many electrons do they hold and what are their shapes?

What are the principle and angular momentum quantum numbers?

Define Aufbau principle.

In the quantum model, can we precisely know the exact location of an electron?

What are the electrons in the outermost energy level called? Which orbitals are these electrons found in?  
What is the maximum number of these electrons an element can have?

Give the **electron configuration and the electron dot notations** for the following elements/ions:

Be

O

Cl

Ca<sup>2+</sup>

Zn

O<sup>2-</sup>

Which elements have the following electron configurations?

1s<sup>2</sup>2s<sup>1</sup> \_\_\_\_\_

1s<sup>2</sup>2s<sup>2</sup>2p<sup>6</sup>3s<sup>2</sup>3p<sup>5</sup> \_\_\_\_\_

1s<sup>2</sup>2s<sup>2</sup>2p<sup>4</sup> \_\_\_\_\_

1s<sup>2</sup>2s<sup>2</sup>2p<sup>6</sup>3s<sup>2</sup>3p<sup>6</sup>3d<sup>6</sup>4s<sup>2</sup> \_\_\_\_\_

Using electron dot notation, show what happens when the following elements form ionic bonds and make a compound.

Li + I

What types of elements combine to make an ionic bond? \_\_\_\_\_

Complete the following table:

| Element   | Symbol | Group Number on Periodic Table | Number of Electrons | Number of Valence Electrons | Number of Core Electrons | Number of Electrons <b>Gained or Lost</b> for Octet | Symbol of Ion |
|-----------|--------|--------------------------------|---------------------|-----------------------------|--------------------------|---|---------------|
| Barium    |        |                                |                     |                             |                          |   |               |
| Fluorine  |        |                                |                     |                             |                          |   |               |
| Aluminum  |        |                                |                     |                             |                          |   |               |
| Sulfur    |        |                                |                     |                             |                          |   |               |
| Potassium |        |                                |                     |                             |                          |   |               |

### ***Ionic Compounds***

*Use your ion sheet and the criss-cross method to give the formulas of the following ionic compounds.*

Potassium iodide \_\_\_\_\_ Barium chloride \_\_\_\_\_ Lead (II) nitrate \_\_\_\_\_

Copper (II) carbonate \_\_\_\_\_ Magnesium phosphate \_\_\_\_\_ Iron (II) sulfide \_\_\_\_\_

Sodium acetate \_\_\_\_\_ Ammonium hydroxide \_\_\_\_\_ Tin (IV) sulfite \_\_\_\_\_

*Name the following ionic compounds using your ion sheet*

KClO<sub>2</sub> \_\_\_\_\_ Na<sub>2</sub>SO<sub>4</sub> \_\_\_\_\_ Li<sub>2</sub>CO<sub>3</sub> \_\_\_\_\_

CuCl \_\_\_\_\_ Pb(OH)<sub>2</sub> \_\_\_\_\_ Al<sub>2</sub>O<sub>3</sub> \_\_\_\_\_

FeF<sub>2</sub> \_\_\_\_\_ Mg(NO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_ Ni(CN)<sub>3</sub> \_\_\_\_\_